

**A STACK-INTEGRATED PACKAGE OF OPTICAL
TRANSCEIVER FOR SINGLE CORE FULL DUPLEX FIBER
COMMUNICATIONS**

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ABSTRACT

The present invention offers a

This invention relates to a novel stack-integration package of a light emitter and a photodetector in a high speed, full duplex optical transceiver for fiber communications. The structure is comprised of a photodetector chip, having an isolated micromachined cavity on the chip surface, and a light emitter chip, stacked on the bottom surface inside that cavity, so that a stack-integrated embodiment of light detector and emitter capable of performing full duplex optical communication is resulted. Said cavity surface in the photodetector is coated with reflective metal to prevent direct optical crosstalk from the emitter to the photodetector. Said light emitter means either LED (light emitting diode) or LD (laser diode).

The present invention is further characterized by having a transparent encapsulation over the stack-integrated embodiment with a specific surface contour that minimizes the Fresnel reflection at the encapsulation-air interface and its associated crosstalk aftereffect. Such packaging structure is particularly suitable as a component for the purpose of single-core, full-duplex optical fiber communications.